

DISPLAY APPARATUS AND METHOD OF CONTROLLING THE SAME

CROSS-REFERENCE TO RELATED APPLICATION(S)

[0001] This application claims priority from Korean Patent Application No. 10-2015-0145167, filed on Oct. 19, 2015, in the Korean Intellectual Property Office, the disclosure of which is incorporated herein by reference in its entirety.

BACKGROUND

[0002] 1. Field

[0003] Apparatuses and methods consistent with exemplary embodiments relate to display apparatuses providing a user with various images and methods of controlling the same.

[0004] 2. Description of the Related Art

[0005] Display apparatuses are devices that visually display various images. The images displayed via these display apparatuses may be images received via broadcasting signals and/or images received from a web server.

[0006] Display apparatuses provide users with high quality viewing services with immersive images by converting received images into more immersive images. Thus, research has been conducted into developing methods of providing immersive images by converting images.

SUMMARY

[0007] According to an aspect of an exemplary embodiment, there is provided a display apparatus including: a color selector configured to select a preferred color corresponding to at least one among a main target and a sub-target determined in an image based on color distribution; a color converter configured to perform color conversion by setting a degree of color conversion of at least one among the main target and the sub-target and converting a color of the at least one among the main target and the sub-target in the image based on the set degree of color conversion; and a controller configured to display the image via a display panel.

[0008] The color selector may be further configured to determine at least one among the main target and the sub-target by analyzing color distribution of a main viewing area in the image.

[0009] The color selector may be further configured to determine at least one among the main target and the sub-target based on at least one among a distribution amount and a distribution degree of colors in a main viewing area of the image.

[0010] The color selector may be further configured to analyze distribution amounts and distribution degrees of colors in a main viewing area of the image, set priorities to the analyzed distribution amounts and distribution degrees of colors, and determine the main target and the sub-target based on the set priorities.

[0011] The color selector may be further configured to set a preferred color for the main target as a main color and a preferred color for the sub-target as a sub-color in a color space.

[0012] The color selector may be further configured to analyze color distribution of an entire viewing area and determine at least one among the main target and the

sub-target in response to determining that there is no main target in the main viewing area.

[0013] The color selector may be further configured to determine at least one among the main target and the sub-target by analyzing color distribution of the image whenever a scene is changed in the image.

[0014] The color selector may be further configured to set a circular area having a diameter equal to a length of the display panel to display the image as a main viewing area.

[0015] The color converter may be further configured to set different degrees of color conversion for the main target and the sub-target.

[0016] The color converter may be further configured to perform color conversion based on preset color conversion rates for the main target and the sub-target.

[0017] The color converter may be further configured to perform color conversion to have a distance between a color of the main target and a preferred color for the main target shorter than a distance between a color of the sub-target and a preferred color for the sub-target in a color space.

[0018] The color converter may be further configured to perform color conversion to have a distance between a color of the main target and the main color shorter than a distance between a color of the sub-target and the sub-color in the color space.

[0019] The color converter may be further configured to maintain degrees of color conversion for the main target and the sub-target until a scene is changed in the image.

[0020] According to an aspect of another exemplary embodiment, there is provided a method of controlling a display apparatus, the method including: selecting a preferred color corresponding to at least one among a main target and a sub-target determined in an image based on color distribution; performing color conversion by setting a degree of color conversion of at least one among the main target and the sub-target and converting a color of the at least one among the main target and the sub-target in the image based on the set degree of color conversion; and displaying the image via a display panel.

[0021] The selecting the preferred color may include determining at least one among the main target and the sub-target by analyzing color distribution of a main viewing area in the image.

[0022] The selecting the preferred color may include determining at least one among the main target and the sub-target based on at least one among a distribution amount and a distribution degree of colors in a main viewing area of the image.

[0023] The selecting the preferred color may include analyzing distribution amounts and distribution degrees of colors in a main viewing area of the image, setting priorities to the analyzed distribution amounts and distribution degrees of colors, and determining the main target and the sub-target based on the set priorities.

[0024] The selecting the preferred color may include analyzing color distribution of the entire viewing area and determining at least one among the main target and the sub-target upon determination that there is no main target in the main viewing area.

[0025] The selecting the preferred color may include determining at least one among the main target and the sub-target by analyzing color distribution of the image whenever a scene is changed in the image.